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IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

In re Applicant:	§	
	§	
GAL-ON ET AL.	§	
	§	
Serial No.: 09/647,952	§	
	§	
Filed: December 06, 2000	§	Group Art Unit: 1638
	§	
For: Recombinant Potyvirus Construct And Use Thereof	§	Attorney Docket: was 1268-107 now 1686/12
	§	
Examiner: DR. GEORGIA HELMER	§	

TRANSMITTAL OF APPEAL BRIEF

Commissioner of Patents and Trademarks
Alexandria, Virginia 22313

Dear Sir:

Transmitted herewith in triplicate is the APPEAL BRIEF in this application with respect to the Notice of Appeal filed on January 16, 2004.

The application is on behalf of a small entity, verified statement already filed.

Pursuant to 37 CFR 1.17(f) the fee for filing the Appeal Brief is:

_X_	small entity	$ 160
___	other than a small entity	$ 320

Appeal Brief fee due $ 160

Please charge Account No. 06-2140 the sum of $150. A duplicate copy of this transmittal letter is attached.

If any additional extension and/or fee is required, this is a request therefor and to charge Account No. 06-2140.

If any additional fee for claims is required, please charge Account No. 06-2140.

Respectfully submitted,

Mark M. Friedman
Attorney for Applicant
Registration No. 33,883

Date: March 2, 2004

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ATTENTION: Board of Patent Appeals and Interferences
Commissioner of Patents and Trademarks
Alexandria, Virginia 22313

APPELANT'S BRIEF

Dear Sir:

This is in furtherance of the Notice of Appeal filed in this case on January 16, 2004.

The fees required under § 1.17(f) and any required petition for extension of time for filing this brief and fees therefore are dealt with in the accompanying TRANSMITTAL OF APPEAL BRIEF.

This brief is transmitted in triplicate.

This brief contains these items under the following headings and in the order set forth below:

I. REAL PARTY IN INTEREST

II. RELATED APPEALS AND INTERFERENCES

III. STATUS OF CLAIMS

IV. STATUS OF AMENDMENTS

V. SUMMARY OF INVENTION

VI. ISSUES

VII. GROUPING OF CLAIMS

VIII. ARGUMENTS

_X_ OBJECTIONS ACCORDING TO MPEP § 608.01 (n)

_X_ REJECTIONS UNDER 35 U.S.C. §112

_X_ REJECTIONS UNDER 35 U.S.C. §102

IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

I. REAL PARTY IN INTEREST

The real party in interest in this case is:

Virogene Ltd.

Hod Ha'Sharon

Israel

II. RELATED APPEALS AND INTERFERENCES

There are no related appeals and interferences in this case.

III. STATUS OF CLAIMS

Claims 1,2,6, 10-12, 15 and 20 are currently pending and stand rejected. All other claims have been cancelled.

IV. STATUS OF AMENDMENTS

In a response [filed 30 April, 2003] to a previous non-final rejection, claims 1,2,6,10,11, 12, 15 and 20 were amended.

In a final action dated July 30, 2003, the Examiner acknowledges these amendments.

V. SUMMARY OF INVENTION

The present invention generally relates to a recombinant potyvirus infectious nucleic acid construct useful for providing protection against viral infection in plants and to a recombinant virus harboring said construct. More specifically, the present invention relates to a recombinant potyvirus infectious construct containing an HC - Pro gene whose sequence coding for the conserved FRNK box contains an (Arg) to Isoleucine (Ile) substitution.

The present invention further relates to a method for the production of a mild strain of potyvirus utilizing the above mentioned construct and to a method for protecting plants from viral infection and for transient expression of foreign nucleic acid (genes) in plants, using said construct. Preferably, the present invention relates to a method for cross protection of cucurbits against ZYMV infection.

VI. ISSUES

The issues presented for review are as follows:

Objections to claims 6, 11, 12 and 20 according to MPEP § 608.01 (n).

Does the phrase "recombinant construct" lack antecedent basis in claims 1,2,6 and 11?

Are claims 1-6,11,12 15 and 20 patentable over Huet et al., (*Mutations in the helper component protease gene of zucchini yellow mosaic virus affect its ability to mediate aphid transmissibility*, J. General Virology (1994) 75:1407-1414; henceforth, "Huet")?

VII. GROUPING OF CLAIMS

For purposes of the objections according to MPEP § 608.01 (n):

claims 6, 11, 12 and 20 are each grouped separately.

For purposes of the §112, second paragraph rejections:

independent claim 1 and dependent claims 2, 6, and 11 are each grouped separately and their separate evaluation is respectfully requested.

For purposes of the §102(b) rejections:

independent claim 1 and dependent claims 2, 11, 12, 15 and 20 are grouped together and will stand or fall together while dependent claims 6 and 10 are presented as a separate group which may stand independently of the other claims.

VIII. ARGUMENTS

OBJECTIONS ACCORDING TO MPEP § 608.01 (N)

The Examiner has objected to multiply dependent claims 6, 11, 12 and 20 citing MPEP § 608.01 (n) which deals with multiply dependent claims. Specifically, the examiner has objected to the format "any of claims X, Y and Z" as a means of indicating alternative (i.e. "or") dependence.

The Examiner's objection is not well taken. MPEP § 608.01 (n) clearly states.

> *One or more claims may be presented in dependent form, referring back to and further limiting another claim or claims in the same application. Any dependent claim which refers to more than one other claim ("multiple dependent claim") shall refer to such other claims in the alternative only.* (emphasis added)

Applicant respectfully, but firmly assrts that the language of claims 6 as currently on file meets the criteria of referring to other claims *"in the alternative only"* as required by the MPEP. The linguistic formula employed is analagous to that found in Markush groups which employ the word "and" although they describe "or" logic. The Examiner's objection is refuted. Nonetheless, in the interest of expediting prosecution, Applicant is willing to agree to expression of alternative dependence in another linguistic formulation if required.

Applicant respectfully, but firmly assrts that the language of claims 11 as currently on file meets the criteria of referring to other claims *"in the alternative only"* as required by the MPEP. The linguistic formula employed is analagous to that found in Markush groups which employ the word "and" although they describe "or" logic. The Examiner's objection is refuted. Nonetheless, in the interest of expediting prosecution, Applicant is willing to agree to expression of alternative dependence in another linguistic formulation if required.

Applicant respectfully, but firmly assrts that the language of claims 12 as currently on file meets the criteria of referring to other claims *"in the alternative only"* as required by the MPEP. The linguistic formula employed is analagous to that found in Markush groups which employ the word "and" although they describe "or" logic. The Examiner's objection is refuted. Nonetheless, in the interest of expediting

prosecution, Applicant is willing to agree to expression of alternative dependence in another linguistic formulation if required.

Applicant respectfully, but firmly assrts that the language of claims 20 as currently on file meets the criteria of referring to other claims *"in the alternative only"* as required by the MPEP. The linguistic formula employed is analagous to that found in Markush groups which employ the word "and" although they describe "or" logic. The Examiner's objection is refuted. Nonetheless, in the interest of expediting prosecution, Applicant is willing to agree to expression of alternative dependence in another linguistic formulation if required.

REJECTIONS UNDER 35 U.S.C. §112, SECOND PARAGRAPH

The Examiner has finally rejected claims 1, 2, 6 and 11 under 35 U.S.C. §112, second paragraph.

The Examiner's rejection is not well taken. Applicant respectfully submits that antecedent basis does not require unnecessary repetition of long phrases so long as it is clear what is being referred to. Generally, in a case where a first construct and a second construct are specified, a reference to "construct" might be confusing. However, in the intstant set of claims, only one construct is referred to. Thus the term "construct" is sufficient to define the antecedent relationship, although additional words or phrases may be repeated at the discretion of the applicant in conjunction with construct.

Specifically, Claim 1, which is [of necessity] an independent claim refers to "A recombinant potyvirus infectious nucleic acid construct" in the first case and "construct " in subsequent occurrences.

Thus, the Examiner's assertion that the phrase "recombinant construct" lacks antecedent basis, as applied to claim 1, is unfounded because the offensive phrase

does not occur in claim 1 other than in the preamble where antecedent basis is neither expected nor feasible.

Further, the term "construct" finds antecedent basis in the phrase "A recombinant potyvirus infectious nucleic acid construct" of the preamble. Applicant argues that while correct use of antecedent basis for terms in the claims is necessary and desirable, unnecessary repetition of long phrases serves only to obfuscate the meaning of the claim.

The Examiner's rejection of claim 1 under 35 U.S.C. §112 is traversed.

With respect to claim 2, which depends from claim 1, the phrase "recombinant construct" in that claim finds antecedent basis in "A recombinant potyvirus infectious nucleic acid construct" and "construct" as recited in claim 1. Applicant concedes that use of the word "The" instead of "A" may have been preferable in the preamble of claim 2. However, this rejection was not made by the Examiner in the previous office action. The Examiner states in the current [final] office action that "To the extent that this is a new rejection, it is necessitated by the applicant's amendment. However, review of the prosecution indicates that neither the preamble of claim 1, nor the preamble of claim 2 was modified by amendment. Applicant feels that the prosecution is unfairly impeded by institution of spurious linguistic rejections at this late stage.

In any case, The Applicant asserts that one of ordinary skill in the art would readily understand that "A recombinant construct according to claim 1" is identical with the "A recombinant potyvirus infectious nucleic acid construct" recited in claim 1. Such an understanding would render all question of antecedent basis moot.

The Examiner's rejection of claim 2 under 35 U.S.C. §112 is traversed.

With respect to claim 6, the preamble specifies "A recombinant potyvirus infectious nucleic acid construct..." and dependence is from claims 1 or 2. Applicant points out that this phrasing is identical to the preamble of claim 1 so that antecedent basis is not at issue with respect to claim 1 dependence. With respect to claim 2 dependence, the "recombinant construct" of claim 2 is identical to that of claim 1 as argued hereinabove.

The Examiner's rejection of claim 6 under 35 U.S.C. §112 is traversed.

With respect to claim 11, the preamble specifies "A recombinant potyvirus infectious nucleic acid construct..." and dependence is from claims 1 or 2 or 6. Applicant points out that this phrasing is identical to the preamble of claims 1 and 6 so that antecedent basis is not at issue with respect to claim 1 dependence or claim 6 dependence. With respect to claim 2 dependence, the "recombinant construct" of claim 2 is identical to that of claim 1 as argued hereinabove.

The Examiner's rejection of claim 11 under 35 U.S.C. §112 is traversed.

All of the Examiner's rejections under 35 U.S.C. §112 are traversed.

REJECTIONS UNDER 35 U.S.C. §102 (B)

The Examiner has finally rejected claims 1-6 and 11, 12, 15 and 20 under 35 U.S.C. §102 (b) as being anticipated by "Huet et. al., (1994) J. General Virology 75: 1407-1414" (hereinafter Huet).

The Examiner's rejection is not well taken. Rejection of these claims as being anticipated by Huet induced the applicant to offer substantive amendments which greatly reduced the scope of the claimed invention. Specifically, the phrase "a single mutation" meaning one and only one mutation was introduced into claim 1.

The Examiner maintains the rejection stating "...there is no reference point to determine what is different one from the other. Applicant needs a SEQ ID NO: or definite frame of reference." Applicant emphasizes that the Examiner has already stipulated, by use of alternative language, that no SEQ ID NO: is required so long as a definite frame of reference is provided.

Patent Rules § 1.821 explains when a Nucleotide and/or amino acid sequence is appropriate :

"a) Nucleotide and/or amino acid sequences as used in §§ 1.821 through 1.825 are interpreted to mean an unbranched sequence of four or more amino acids or an unbranched sequence of ten or more nucleotides. Branched sequences are specifically excluded from this definition. Sequences with fewer than four specifically defined nucleotides or amino acids are specifically excluded from this section" (emphases added)

Thus, the instantly claimed "single mutation encoding a substitution of Arg by Ile" is specifically excluded from the requirement for a sequence listing because it deals with a single Amino Acid or (at most) three nucleotides.

Alternately, or additionally, in response to the Examiner's request for a "definite frame of reference", the Applicant respectfully directs the attention of the appeal board to Figure 2 (page 1410) of Huet, specifically to the first line marked "present study". This portion of the Huet reference was specifically cited by the Examiner in a previous office action. Huet, at the time of publication of the article, was in possession of a ZYMV mutant characterized by two mutations (one in the FRNK box; the other in the PTK box).

Claim 1, as currently on file, is directed towards a construct containing a single mutation. Applicant strongly asserts that this stipulation of "a single mutation" provides a reference point for patentably distinguishing the claimed construct from the 2-mutant construct described by Huet.

While the Huet reference is definitely appropriate to use in examining the instant application, any assertion that Huet anticipates the instantly claimed invention must ultimately be rejected. Huet observed certain properties in a mutant strain with 2 mutations. However, Huet does not hint or fairly suggest that the Arg to Ile mutation in the FRNK box ALONE is necessary or desirable to produce a:

"...construct is capable of systemic infection of a plant;

wherein said systemic infection induces a mild form of disease; and wherein said systemic infection affords cross protection against a subsequent potyvirus infection."

as instantly claimed.

Applicant respectfully suggests that, in the context of published art available to skilled practitioners at the time the application was filed "FRNK box" is a scientific term with an accepted definition. Further, FRNK box provides the frame of reference for the claimed Arg to Ile mutation. Because a definite frame of reference is provided, there is no need for a SEQ ID NO:. Applicant asserts that, the Examiner cannot on the one hand cite Huet and on the other hand claim that there is no frame of reference for the claimed mutation.

Further, with respect to claims 2 and 10, the exact position of the FRNK box within the ZYMV potyvirus is well established (e.g. see Huet) thus the requisite frame of reference has been provided.

In summary, those of ordinary skill in the art are familiar with both the meaning of the scientific term "FRNK box" and its position in the relevant virus. The claimed single Amino Acid mutation requires neither a sequence listing nor a frame of reference beyond the stipulation that it is in the FRNK box.

The Examiner's has rejection of claims 1-6 and 11, 12, 15 and 20 under 35 U.S.C. §102 (b) is traversed.

All rejections are traversed.

All objections are refuted.

Claims 1-6 and 11, 12, 15 and 20 are in condition for allowance. Prompt notice of allowance is respectfully and earnestly solicited.

Respectfully submitted,

Mark M. Friedman
Attorney for Applicant
Registration No. 33,883

Date: March 2, 2004

IX. APPENDIX OF CLAIMS INVOLVED IN THE APPEAL

The text of the claims on appeal is:

1) (Previously Entered) A recombinant potyvirus infectious nucleic acid construct useful for plant cross protection, the construct comprising a full length clone characterized by a single mutation, said single mutation residing in its HC- Pro gene conserved FRNK box encoding sequence said single mutation encoding a substitution of Arg by Ile;
wherein the construct is capable of systemic infection of a plant;
wherein said systemic infection induces a mild form of disease; and wherein said systemic infection affords cross protection against a subsequent potyvirus infection.

2) (Previously Entered) A recombinant construct according to claim 1 wherein the nucleic acid is cDNA or an RNA transcript.

3-5) (Cancelled)

6) (Previously Entered) A recombinant potyvirus infectious nucleic acid construct according to any of claims 1 and 2 wherein the potyvirus is ZYMV.

7-9) (Cancelled)

10) (Previously Entered) A recombinant construct according to claim 6 wherein said cross protection is against severe strains of ZYMV.

11) (Previously Entered) A recombinant potyvirus infectious nucleic acid construct according to any of claims 1, 2 and 6 wherein the potyvirus is selected from BCMV, BYMV, BtMV, MWMV, OYDV, PRSV, PStV, PepMoV, PVMV, CGVBV, GEV, ISMV, JGMV, LYSV, LMV, MDMV, PPV, PVA, PVV, PVY, SCMV, SPFMV, TEV, TVMV, TBV, TuMV, WMV-2, YMV and ZYFV.

12) (Previously Entered) A recombinant construct according to any of claims 1, 2, 6, 10 and 11 further useful for the transient expression of foreign nucleic acid in plants wherein the full length clone has, in any position, a sequence of DNA or RNA inserted into the full length clone.

13-14) (Cancelled)

15) (Previously Entered) A method for introducing foreign nucleic acid into plants comprising infecting a plant with a recombinant potyvirus infectious nucleic acid construct as defined in claim 11.

16-19) (Cancelled)

20) (Previously Entered) Compositions for plant inoculation or for transient expression of foreign nucleic acid in plants containing, as an active ingredient, the recombinant construct according to any of claim 1, 2, 6, 10, 11 and 12.